

INTRODUCTION

Food insecurity is defined as the uncertainty of availability of nutritionally adequate or safe food (1). When nutrient intake does not meet personal needs, normal body functions become impaired. Research shows that nutritional alterations at a young age can result in abnormal behaviors including impulsiveness, inattention, social unawareness, and educational delays (2).

This research project investigates the prevalence of food insecurity in the Middle Tennessee area, and the effects seen through children's behavior.

This research study aims to identify the relationship between food insecurity and abnormal behavior in school aged children grades K-8.

Research Aim 1: Analyze the prevalence of Food Insecurity in Middle Tennessee.

Hypothesis 1: Families living in Middle Tennessee will report a low prevalence of food insecurity in their household.

Research Aim 2: Identify if food insecurity has a direct impact on the behavior of children.

Hypothesis 2: Families who report food insecurity in their household will also report adverse behaviors in their children.

METHODS

A short survey was created using REDCap and was distributed on Facebook to the researchers' personal pages and the Moms of Hendersonville Facebook Page. The survey had a target audience of families with children in school grades K-8. A total of 59 responses were gathered, with 11 responses being disregarded, as they did not meet the target audience. The 10-question survey, consisted of 4 questions related to food insecurity, 1 related to community resources, 2 related to behavior and 1 related to educational development. The remaining 2 questions of the survey did not gather appropriate data and were not used in data analysis. The gathered data was exported into excel for analysis.

Questions to address food insecurity were adapted from the Hunger Vital Sign (3), a screening tool that is used to identify food insecurity amongst families. Behavioral analysis questions were adapted from CDC Developmental Milestone for Children (4), a resource available for parents to measure their child's development with specific milestones. Each Food Insecurity question was measured on a scale from Never True to Often True. These were then converted to a 3-point scale (Never True=0, Sometimes True=1, Often True=2) for analysis. If a participant scored a 1 or 2 throughout the survey, they were labeled as "Food Insecure" and those who scored a 0 were labeled "Food Secure". Questions regarding abnormal behavioral were analyzed based on the sum, not the specific behavior reported. Data was analyzed through chi squared test with results reported at 95%

1) How many kids do you have attending grade school? (K-8) 0 1-2 3-4 5+

2) In the last 12 months, we worried whether our food would run out before we got money to buy more Often true Sometimes true Never true

3) Within the last 12 months the food we bought just didn't last and we didn't have money to buy more Often true Sometimes True Never True

4) In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food? Often true Sometimes true Never true

5) Which, if any, of the following resources do you currently access (select all that apply): Local Food Bank Local Soup Kitchen WIC SNAP None

6) Do you feel comfortable asking your doctor questions about what your child should be eating? Yes No

7) Does your child show any of the following? Has trouble speaking clearly Has trouble repeating home address/phone number Has trouble counting to 10 Has trouble using full sentences N/A

8) Does your child show any of the following behaviors? Quick temper Struggles finishing homework Often annoyed or nervous Refuses to follow the rules Often in trouble at school None

9) Is your child at the appropriate reading level for his/her age? Yes No

10) Do you have any concerns about your child's development currently?

Figure 1

Figure 2

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RESULTS

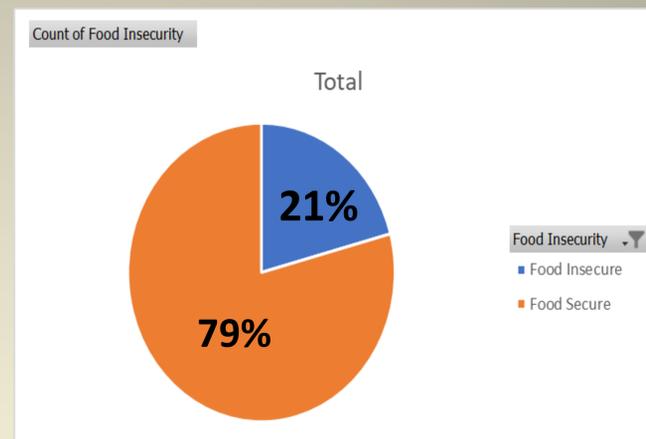


Figure 3

Figure 3 shows the prevalence of food insecurity among survey respondents. Of the 49 survey participants, 79% did not report food insecurity and 21% reported food insecurity.

56% of participants, both food secure and food insecure, reported that their child does not show any abnormal behaviors. Behaviors measured can be seen in figure 2. Of the 10 participants that reported food insecurity, 70% of them reported their child showing 1 or more abnormal behaviors. 36.8% of participants, who did not report food insecurity, claimed their child does show 1-2 abnormal behaviors.

This data produced a p-value of .0111, demonstrating statistically significant.

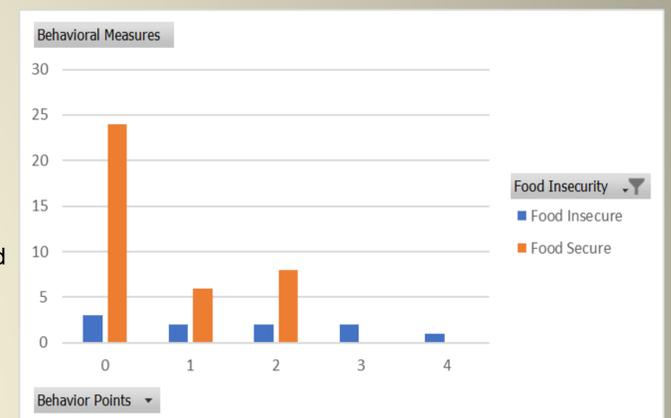


Figure 4

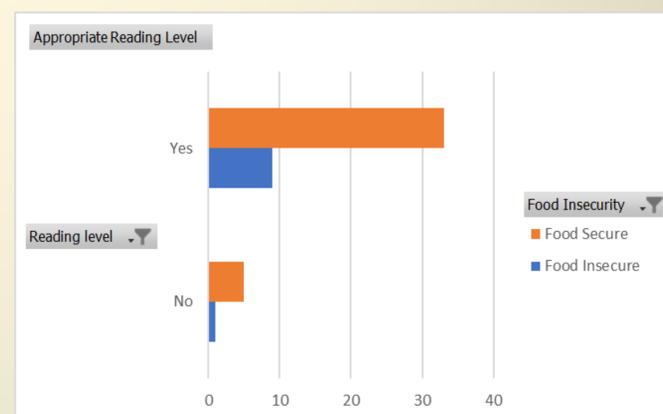


Figure 5

Figure 5 shows the association between reading level and food insecurity vs food security. Of the 10 participants who reported food insecurity, 90% claimed that their child is at the appropriate reading level for their age. 86.8% of participants who reported food security within their household claims their child is at the appropriate reading level for their age. Only 6 participants total reported that their child is not at the correct reading level for their age, and only 1 of those participants is food insecure.

SUMMARY/CONCLUSIONS

Food insecurity is often under-reported to medical professionals, due to shame (5). Keeping that in mind, gathering accurate and diverse data was difficult and resulted in a smaller study than desired. The findings of our study support our first hypothesis, as seen in figure 3. Figure 3 shows, that 10 participants reported being food insecure and 48 participants reported being food secure. Despite our survey size, we were able to reach an adequate amount of our target population to draw some conclusions.

Food Insecurity can lead to several complications in a child's life. Our study hypothesized a direct relationship between food insecurity and abnormal behavior of children. The findings of our study support this hypothesis, as seen in Figure 4. The collected data presented as statistically significant, supporting hypothesis 2.

Data regarding food insecurity affecting a child's appropriate reading level, was not found. As seen in Figure 5, results from this study show that there is no correlation between food insecurity and a child being at the appropriate reading level for their age.

While this study had conclusive results, there were also limitations. First, this study was presented on Facebook, immediately limiting our population to only those who have access to social media. The surveyed population also had limited diversity. Next, this study was self-reported, and did not measure demographic data. Also, of our 10-question survey, 2 questions did not provide pertinent information and had to be disregarded. Finally, our study representing Middle Tennessee, was measured on 48 responses. Each of these limitations validates the need for further research on a larger and more diverse scale.